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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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CDEX, Inc. 4555 S. Palo Verde, Suite 123 Tucson, AZ 85714				
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EXAMINER				
BRYANT, MICHAEL C				
ART UNIT		PAPER NUMBER		
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/717,921

Applicant(s)

POTEET ET AL.

Examiner

CASEY BRYANT

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Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 July 2010.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1.4.5.8-28.31-35.40-42 and 46-48 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1.4.5.8-28.31-35.40-42 and 46-48 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Status of Claims

1. Applicant's reply, filed 7/15/2010, has been received and entered. Claims 1, 13, 18, 21, 28, 32, 40, 41 and 46-48 have been amended. Claims 2, 3, 6, 7, 29, 30 and 36-39 and 43-45 have been cancelled. Thus, claims 1, 4-5, 8-28, 31-35, 40-42 and 46-48 remain currently pending in this application.

Response to Arguments

2. Applicant's arguments filed 7/15/2010 have been fully considered but they are not persuasive.

Rejections under 35 USC § 112, second paragraph

In view of the claim amendments, the Examiner withdraws the rejections of claims 1, 4, 5, 8-28, 32-35 and 41 under 35 USC § 112.

Rejections under 35 USC § 103

Regarding claims 1, 28 and 32 Applicant argues that the combined references (Cole and Hodgkinson) fail to teach an analysis module for applying an algorithm to acquire sample data of the induced fluorescent energy and for matching the sample data of the induced fluorescent ultraviolet energy against a previously determined signature spectrum. First, Hodgkinson recites, on pages 6-7, using well known spectroscopic pattern matching algorithms, such as principal components regression analysis, to fit the broad spectral bands for the components, to the measured fluorescence spectrum. Additionally, the recitation of "an analysis module for applying an algorithm to acquired sample data..." is a statement of intended use of the device, and not specifically require the algorithm. A positive limitation would be, for example, "an analysis module comprising an algorithm, the algorithm when executed performing the steps comprising".

Applicant argues that Cole and Hodgkinson fail to teach the input optic as an f/2 lens having a diameter over 1 meter. The Examiner agrees the references do not specifically teach the f-spot and lens diameter. However, the Examiner argues that selecting an optic of specific focusing properties is within the level of ordinary skill in the art. However, specifying a specific size and diameter lens would have been an obvious matter of design choice. A change in size is generally recognized as being within the level of ordinary skill in the art. *In re Rose*, 105 USPQ 237 (CCPA 1955). Specifically, selecting a specific f-stop and lens diameter would have been obvious to one of ordinary skill in the art base on the desired detection application. For example, it would have been motivated to specify a large f-stop (e.g. F/2) based on a desired depth of field and the amount of light need for imaging, and would have selected a large lens diameter (e.g. >1 meter) to image a large viewing area. However, if the Applicant can overcome the obviousness rejection by demonstrating that the specific lens properties (i.e. diameter, f-stop) produce unexpected results.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at

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the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. Claims 1, 4, 9, 11, 15-17, 21, 24-28 and 31-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cole et al. (US Pub. 20030160231) in view of Hodgkinson (GB Pat. 2365966).

Regarding claims 1, 28 and 32, Cole discloses a UV fluorescence detector comprising: an excitation light source (Figure 5) **510**, a sample platform **520**, a UV detector **114**, a camera platform **150**, and an analysis module capable of matching the induced fluorescence to a predetermined signature spectrum (0037).

Cole fails to teach a first optic for directing excitation light to the sample platform **520**, a specific algorithm for matching sample to a previously determined signature spectrum, a controller for monitoring the excitation light spectrum stabilization, or a power source for providing power to the light source.

Hodgkinson teaches optics for directing the excitation light to the sample-receiving platform (Figure 2, element A). In view of the ability to flexibly illuminate a sample, it would have been obvious to one of ordinary skill in the art to provide a fiber optic as taught by Hodgkinson in the device of Cole.

Cole teaches the detector detecting known signatures from the samples which are then comparable to identified signatures to identify the samples, but does not teach an algorithm for performing the matching. Hodgkinson teaches that is known in the art to provide a processing unit with an algorithm for performing the spectroscopic matching (p. 6-7). In view of the automated fluorescent signature matching provided an algorithm as taught by Hodgkinson, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate in the device of Cole.

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Coles teaches an input optic capable of passing induced fluorescence to the UV detector, but does not teach the input optic as an F/2 lens having a diameter over 1 meter. However, specifying a specific size and diameter lens would have been an obvious matter of design choice. A change in size is generally recognized as being within the level of ordinary skill in the art. *In re Rose*, 105 USPQ 237 (CCPA 1955). Selecting a specific f-stop and lens diameter would have been obvious to one of ordinary skill in the art base on the desired detection application. For example, it would have been motivated to specify a large f-stop (e.g. F/2) when performing wide-angle detections, and would have selected a large lens diameter (e.g. >1 meter) to image a large viewing area.

Regarding claim 4, Hodgkinson teaches a fiber optic coupler and optical fiber (Figure 2; C7, L6-17).

Regarding claims 8, 9 and 33, Coles teaches a lens **118** for receiving the fluorescent light (Fig. 1; 0023).

Regarding claim 11, Coles teaches a spectrograph (0036).

Regarding claim 15, Cole discloses that the detector comprises a signal processor in the form of a tunable band pass filter (0027, lines 15-17).

Regarding claim 16, Cole does not specify a power source to provide power to the electronic components. However, it would have been obvious to one of ordinary skill in the art at the time of the invention to provide electric power sources to the instant components for operating the detection system.

Regarding claim 17, Cole discloses that the excitation light source includes at least an UV LED (0037).

Regarding claim 21, Cole discloses that the detector detects signals within about 240 nm to about 540 nm (0029).

Regarding claims 24-25, Cole does not teach that the detector comprises a handheld scanner connected to the detector via fiber optic cables. The apparatus taught by Hodgkinson teaches a hand-held scanner connected to a UV detector via fiber optic materials (P 6, L1-6). It would have been obvious at the time of invention to one of ordinary skill in the art to use a handheld scanner connected to the detector by fiber optic materials. This would allow the apparatus to be field-portable.

Regarding claims 26-27, Cole does not teach that the detector can detect UV emissions from a chemical compound. Hodgkinson teaches a detector that can detect UV emissions from a chemical compound (P3, L18-20). It would have been obvious at the time of invention to one of ordinary skill in the art to use the detector of Cole to detect UV emissions from a chemical compound as taught by Hodgkinson. This would allow detection of chemical contaminants on-site as opposed to in a laboratory setting (Hodgkinson, P3, L10-12).

Regarding claim 31, Cole teaches comparing parameters of a measured unknown sample fluorescence with parameters of a known fluorescence and defining a match based on a likeness of the known and unknown fluorescences (0037).

5. Claims 5, 10, 12, 14, 34 and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cole et al. (US Pub. 20030160231) in view of Hodgkinson (GB Pat. 2365966), Dou et al. (US Pat. 5617205), and Adachi (US Pub. 20020022766).

Regarding claims 5, 10 and 34, Cole in view of Hodgkinson does not teach the use of a filter wheel. Adachi teaches an endoscope that employs UV fluorescence and makes use of filter wheels (fig. 1, elements 23 and 25). It would have been obvious at the time of invention to one of ordinary skill in the art to use the filter wheels as taught by Adachi in the

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apparatus of Cole in view of Hodgkinson. The use of a filter wheel allows for a fine-tuning of the excitation light or the light from the induced fluorescence.

Regarding claim 12, Cole in view of Hodgkinson does not teach the use of a CCD detector. Adachi teaches a CCD detector (fig. 1, element 15). It would have been obvious at the time of invention to one of ordinary skill in the art to use a CCD detector as taught by Adachi in the apparatus of Cole in view of Hodgkinson. The use of CCDs is well known in the art, as they are noted for high quantum efficiency.

Regarding claim 14, Cole in view of Hodgkinson does not disclose that the apparatus comprises a computer. Adachi teaches the use of a computer (0064) connected to the system. It would have been obvious at the time of invention to one of ordinary skill in the art to use a computer in the apparatus of Cole in view of Hodgkinson for purposes of display and further processing.

Claim 35 recites limitations of claim 1 in combination with a limitation of claim 12. The rejections of claims 1 and 12 are applied accordingly. Additionally, claim 35 discloses an apparatus comprising an analysis module for matching the induced fluorescent energy against a previously determined spectrum. Cole does not teach such a module. Hodgkinson teaches a method comprising the step of matching spectroscopic patterns (page 6, line 19-page 7, line 1). It would have been obvious at the time of invention to one of ordinary skill in the art to include an analysis module in the apparatus of Cole to perform the step disclosed by Hodgkinson. The use of such analysis would assist in the analysis of, for example, PCBs against a range of other chemicals.

6. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cole et al. (US Pub. 20030160231) in view of Hodgkinson (GB Pat. 2365966) and Sabsabi et al. (US Pat. 5781289).

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Regarding claim 18, Cole teaches a laser but does not teach a specific laser power. Sabsabi teaches a fluorescence spectroscopic system comprising a laser having a power of 250 mJ (C6, L10-30). It would have been obvious to one of ordinary skill in the art at the time of the invention to specify the laser power taught by Sabsabi in order to perform the measurements disclosed therein.

7. Claims 19-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cole et al. (US Pub. 20030160231) in view of Hodgkinson (GB Pat. 2365966) and Dou et al. (US Pat. 5617205).

Regarding claim 19, Cole teaches a laser but does not teach a pulsed laser source. Dou teaches a system having a pulsed laser source (C5, L65 - C6, L5). It would have been obvious to one of ordinary skill in the art at the time of the invention to use a pulsed laser source as taught by Dou in order to select a particular stimulation wavelength and increase power output.

Regarding claim 20, Cole fails to teach a controller capable of monitoring an light source. Dou teaches a Raman spectrometer comprising a controller **60** for monitoring and correcting fluctuations in an excitation light (Figure 2; C7, L6-17). In view of the improved measuring accuracy provided by the excitation light controller taught by Dou, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device of Cole to specify such a controller (C3, L63 - C4, L12).

8. Claim 22, 23 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cole et al. (US Pub. 20030160231) in view of Hodgkinson (GB Pat. 2365966) and Sackett (US Pat. 3920336).

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Regarding claim 22, Cole does not teach a light minimizing enclosure. Sackett teaches a light minimizing enclosure (cavity 16/40)(Fig. 1-2; C1, L49 - C2, L8). In view of the ability to effectively measure a sample (e.g. gas, molecules, etc.) in a concentrated contained environment, it would have been obvious to one of ordinary skill in the art at the time of the invention to use a spherical cavity as taught by Sackett in the device of Cole.

Regarding claim 23, Sackett discloses the cavity including a reflective inner surface (C1, L49 - C2, L8).

Regarding claim 27, Cole discloses the sample including a biological agent (0010).

9. Claims 40, 42 and 46-48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cole et al. (US Pub. 20030160231) in view of Hodgkinson (GB Pat. 2365966), Sackett (US Pat. 3920336) and Dou et al. (US Pat. 5617205).

Regarding claims 40 and 46-48, Cole discloses a UV fluorescence detector comprising: an excitation light source (Figure 5) **510**, a sample platform **520**, a UV detector **114**, a camera platform **150**, and an analysis module capable of matching the induced fluorescence to a predetermined signature spectrum (0037). Coles fails to teach a first optic for directing excitation light to the sample platform **520**, a controller for monitoring the excitation light spectrum stabilization, or a power source for providing power to the light source. Hodgkinson teaches an optics for directing the excitation light to the sample-receiving platform (Figure 2, element A). In view of the ability to flexibly illuminate a sample, it would have been obvious to one of ordinary skill in the art to provide a fiber optic as taught by Kodgkinson in the device of Cole. Cole fails to teach a controller capable of monitoring a light source. Dou teaches a Raman spectrometer comprising a controller **60** for monitoring and correcting fluctuations in an excitation light (Figure 2; C7, L6-17). In view of the improved measuring accuracy provided by the excitation light controller taught by

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Dou, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device of Cole to specify such a controller (C3, L63 - C4, L12). Cole does not teach a light minimizing enclosure. Sackett teaches a light minimizing enclosure (cavity 16/40)(Fig. 1-2; C1, L49 - C2, L8). In view of the ability to effectively measure a sample (e.g. gas, molecules, etc.) in a concentrated contained environment, it would have been obvious to one of ordinary skill in the art at the time of the invention to use a spherical cavity as taught by Sackett in the device of Cole.

Regarding claim 42, Dou teaches the laser as pulsed (C5, L67).

10. Claim 41 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cole et al. (US Pub. 20030160231) in view of Hodgkinson (GB Pat. 2365966), Sackett (US Pat. 3920336), Dou et al. (US Pat. 5617205) and Sabsabi et al. (US Pat. 5781289).

Regarding claim 41, Cole teaches a laser but does not teach a specific laser power. Sabsabi teaches a fluorescence spectroscopic system comprising a laser having a power of 250 mJ (C6, L10-30). It would have been obvious to one of ordinary skill in the art at the time of the invention to specify the laser power taught by Sabsabi in order to perform the measurements disclosed therein.

Conclusion

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until

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after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to CASEY BRYANT whose telephone number is (571)270-1282. The examiner can normally be reached on Monday - Friday, 8am - 5pm, EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dave Porta can be reached on (571)272-2444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/C. B./
Examiner, Art Unit 2884

/David P. Porta/
Supervisory Patent Examiner, Art
Unit 2884